

EE-821

# ORNAMENTAL NOVALUX



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GENERAL ELECTRIC COMPANY



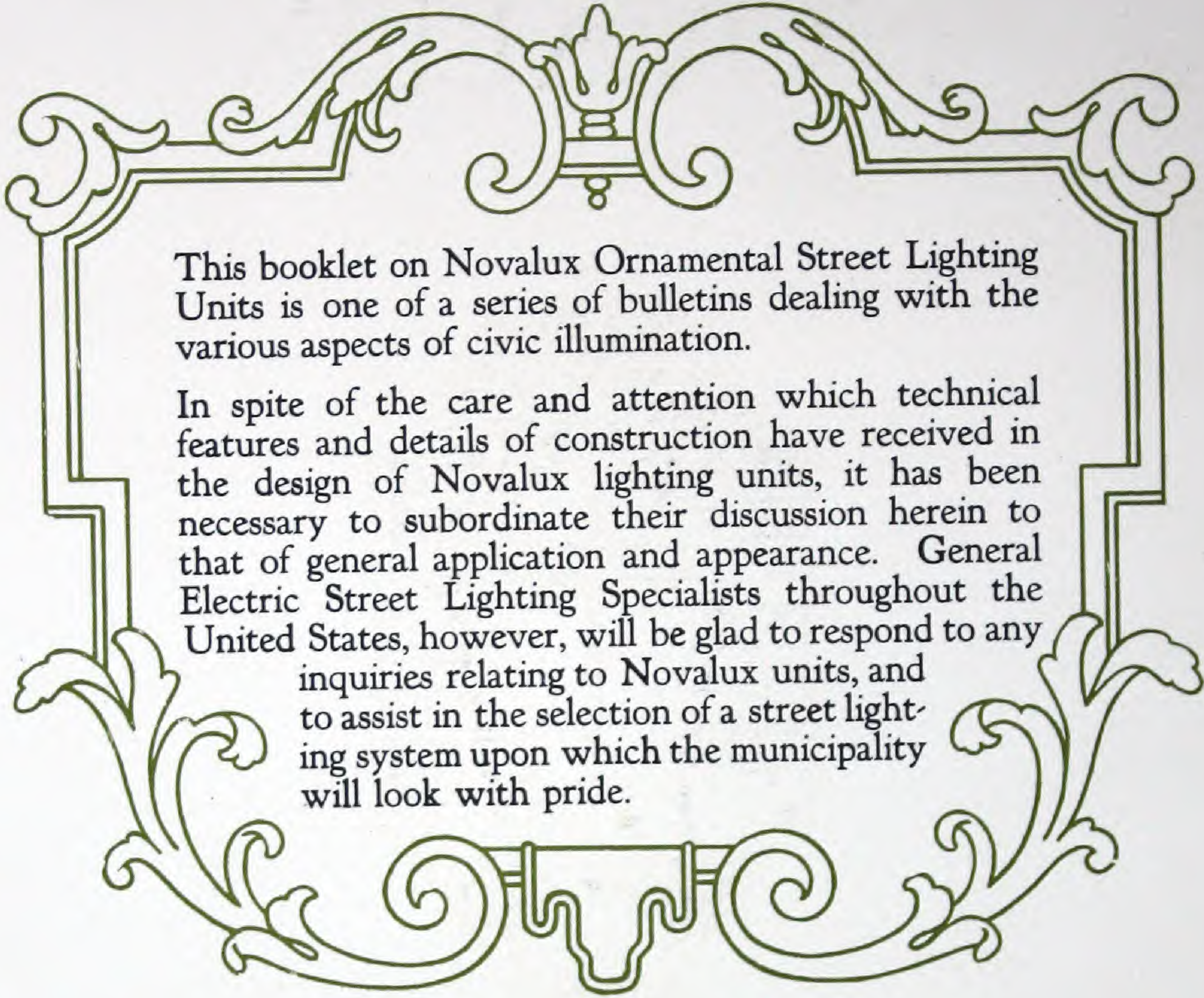




AUG 20 1924

Ornamental  
Novalux





This booklet on Novalux Ornamental Street Lighting Units is one of a series of bulletins dealing with the various aspects of civic illumination.

In spite of the care and attention which technical features and details of construction have received in the design of Novalux lighting units, it has been necessary to subordinate their discussion herein to that of general application and appearance. General Electric Street Lighting Specialists throughout the United States, however, will be glad to respond to any inquiries relating to Novalux units, and to assist in the selection of a street lighting system upon which the municipality will look with pride.



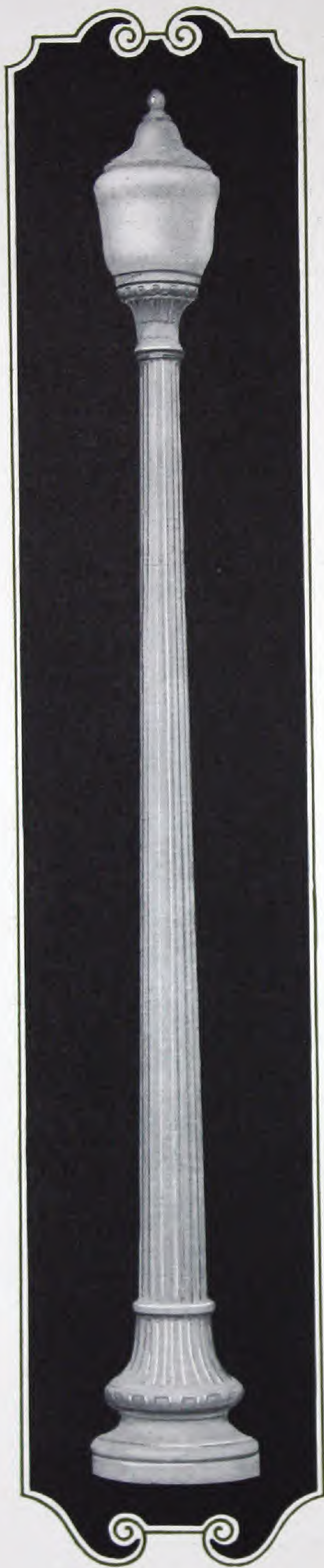
# ORNAMENTAL NOVALUX



GENERAL ELECTRIC COMPANY  
SCHENECTADY, N. Y.



## Form 8



Form 8—No. 39 Globe

**S**MALL, simple and compact, the Form Eight Ornamental Novalux Unit may be mounted on slender standards for white way lighting in towns and villages and for lighting the less important business streets of larger cities.

This unit has been designed particularly for use with 1000- to 6000-lumen, 6.6-ampere, series or 200- to 1000-watt multiple Mazda C lamps. Since the Form Eight casing will not contain an auto-transformer, high current series lamps can be used in this unit only in connection with a Type IL transformer at the base of the standard.

Externally the casing is decorated with a simple design architecturally in harmony, with fluted and reeded standards.

Within the casing two cast lugs support a porcelain socket which holds the lamp receptacle. The globe seat is embodied in the top of the casing, the globe being held in place by three set screws, while the bottom of the casing is made to fit the top of the standard. A few substantial parts are assembled to make a simple unit, durable and dependable.

The Form Eight casing fits a pole with a top four inches in diameter, and is made in four types, appearing practically the same, but differing in method of attachment to the standard, and in the diameter of the globe seat.

When equipped with a Number 39 Genco globe and glass canopy, the unit has a very attractive appearance at night, the globe being designed so as to be completely filled with light from the casing to the top of the canopy. The diffusing glass used in the globe is of such a density as to completely suppress the unpleasant glare of the naked filament. The resultant effect is a soft glow with light being thrown upward against the building facades as well as downward upon the streets.

The glass canopy is distinctly a Novalux achievement which adds greatly to the beauty of the units at night. However, if desired, an aluminum canopy may be had instead. With the aluminum canopy a reflector is placed inside and at the top of the globe to direct downward and make useful some of the light which would otherwise be wasted in the canopy. It is obvious that less light



is available for illuminating the upper stories of buildings along the street when a metal canopy is used than with a glass one.

The quality of the glass used with ornamental street lighting units is of great importance in determining the ultimate attractiveness and efficiency of the installation. With this in mind, the General Electric Company is offering rippled alabaster globes and canopies for use on its street lighting units.

Rippled glass diffuses the light by breaking it up and passing it through an external flashing of opal. The surface is covered with little ridges and furrows so that the appearance of the units equipped with this glass is quite different from that of those having the ordinary diffusing globes, the sparkling light from the rippled surfaces suggesting life and motion. Rippled glass is very effective in preventing glare, absorbs so little light that it is the most efficient type of diffusing glassware, and its delicate glitter is most pleasing both by day and night.

The Number 109 rippled alabaster globe and canopy is one of the most pleasing globes that can be used on an ornamental lighting unit. It is of the same shape as the Number 39 Genco globe but is made of the rippled glass which gives a very desirable dash and brilliance to the installation.

A metal canopy may be used instead of the glass one if so desired.

The Number 123 rippled alabaster globe and canopy was produced in response to the demand for a design of more classical lines. The lower opening has been reduced in order to prevent, as much as possible, the loss of light in the bottom of the globe, and to improve the appearance of the unit as a whole. The canopy and the globe are held together by an ornamental band of perforated brass, and the canopy is supported independently of the globe so that breakage of the latter does not mean destruction also of the former. Though larger than the units previously described, the delicate outlines and sparkling surface of the Number 123 globe make it one of unrivaled beauty.



*Form 8—No. 39 Globe*



*Form 8—No. 109 Globe*





*Form 8—No. 123*

The Number 103 Polycase globe and canopy is the same size and shape as the Number 123. It is, however, made of a smooth translucent diffusing glass instead of the alabaster rippled glass.

Any of the rippled glass globes may be equipped with a Holophane dome refractor which, at some sacrifice in efficiency re-directs part of the upward light down onto the street. The refractor is sometimes useful on boulevards, parkways, and in residential districts where upward light may not be required.

Globes on street lighting units serve a threefold purpose. In the first place they diffuse the light. The modern series Mazda lamps of over 2500 lumens have such an intense concentration of light in the short filament that to look directly at them is as blinding as to look at the sun. To have these high-power lamps exposed is nothing short of torture to the eyes, and certainly no intelligent person would counsel it.

A diffusing globe, however, acts as a secondary light source, conceals the filament, and reduces a most distressing glare to a comfortable glow. The kind of glass used for the globe is important from the standpoint of diffusion. Too often diffusion is obtained at a great sacrifice in illumination. The best results are attained only through a carefully balanced selection of glassware and globe size. Rippled alabaster glass probably gives the best diffusion for the least absorption, and in general the globe size should be large for light sources of high intensity.

The second use of the globe is to protect the lamp and receptacle. The glass of the lamp, becoming hot in operation, will crack if touched by a cold raindrop. It may also break if struck by hail. In winter snow and ice are kept from the lamp and receptacle.

Finally the globe serves a decorative purpose. It carries out the architectural lines of the standard. It forms something substantial to surmount the necessarily substantial pole. It may be used to add sparkle to the light and reduce glare.



## Form 9

**T**HE Form Nine Novalux Unit is designed for more intensive white way lighting than is possible with the Form Eight, which makes it suitable for the main business streets of large cities. The casing is designed to contain an auto-transformer so that high current series Mazda C lamps up to 15,000 lumens may be used with the unit as well as the straight series and multiple lamps.

The Form Nine unit is designed to have as few parts as possible; it consists simply of a casing, a porcelain insulating plate which acts as a socket for the receptacle, a globe, and a canopy. Where an auto-transformer is used, it is fastened to the under side of the porcelain insulating plate.

The external design of the casing is such as may be appropriately used with a round, fluted or reeded standard.

The casing fits standards with tops about six and one-half inches in diameter, and is designed to support globes considerably larger than those of the Form Eight.

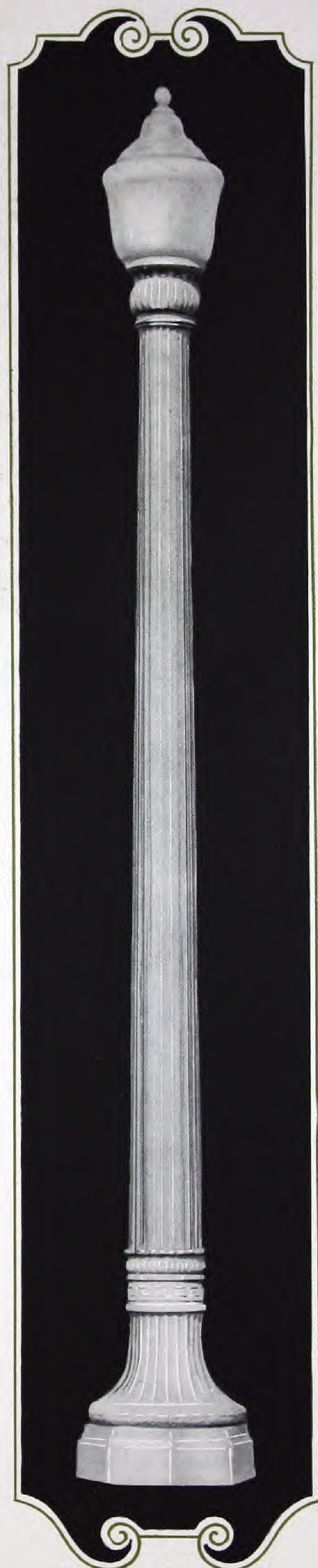
When equipped with a Number 37 Genco globe and glass canopy, this unit is recommended for white way lighting using Mazda C series lamps of 6000 and 10,000 lumen sizes. The globe is shaped almost exactly like the Number 39 Genco globe; it is, however, somewhat larger in order to properly diffuse the light from the larger lamps that may be used with the Form Nine units.

If desired a metal canopy and reflector may be had for the Number 37 Genco globe instead of the glass canopy.

The Number 107 Alabaster Rippled Globe is the same shape and size as the preceding globe. The rippled glass is made by adding a medium flashing of opal to the outer surface of a clear rippled glass which produces a combination of sparkle and soft diffusion unequalled in any other globe. Not only is the rippled glass exceptionally attractive when lighted from within, but it also appears very well by daylight.

Either a glass canopy to match the globe or a metal canopy with a reflector may be used.

The Eight-Panel diffusing globe is recommended for the largest Mazda lamps, 10,000 or 15,000 lumens,



*Form 9—No. 37 Globe*





*Form 9—No. 107 Globe*

for white way lighting in the largest cities. The distribution of light from this unit is such that it provides an equal amount of illumination for the street surface and the building fronts. This globe is very impressive in appearance and is of the highest decorative value.

The globe is built up of eight panels of diffusing glass held in an iron frame. Each glass panel is curved so that the entire globe is round. The panels are fastened in place against felt strips by spring clips so that the unit is weatherproof and dustproof, and any one panel may be replaced when broken without disturbing the others. A flat metal reflector suspended in the canopy above the lamp prevents loss of light in the top. The canopy is hinged so that it may be swung back to gain access to the interior for cleaning or renewing the lamp. The globe, complete, with its framework and canopy may be removed

from the casing if desired as it is held in place by set screws.

The Number 118 rippled alabaster globe is an all glass unit of the same general contour as the Eight-Panel globe. It finds a wide use in white way lighting. This unit is less ornate than the paneled one, but has a slightly higher efficiency due to the freedom from metal ribs, and the smaller top and bottom openings. Either a metal or a glass canopy may be used.

For use where upward light is very undesirable all rippled glass units may be equipped with Holophane dome refractors which turn the upward light down on the street.

The glass and metal canopies supplied with all except panelled globes are fastened in place by a rod which passes down through the center of the canopy to a framework inside the globe. The rod terminates outside of the globe in an ornamental knob. When it is necessary to renew a lamp, the rod is partially unscrewed which allows the canopy to be moved to one side, leaving the globe open, after which the refractor, if one is used, may be removed, and then the bulb.

The Mazda series lamps of 4000-, 6000-, and 10,000-lumens are much more efficient



*Form 9—No. 90 Eight-Panel Globe*



when operated at 15 and 20 amperes than at the 6.6 amperes of the standard series circuit. It is to take advantage of the greater efficiency of the high current lamps that the Form Nine and other large Novalux units have been designed to contain an auto-transformer.

If, in connection with high current lamps, it is desired to protect everything above the ground-line from high voltages, a Type IL transformer should be used instead of the auto-transformer. The Type IL transformer is an individual lamp insulating transformer which is used to adapt 15- and 20-ampere lamps to 6.6-ampere circuits. It may be used with all ornamental Novalux units and is mounted in the base of the standard, on a pole, or buried in the ground.

The globe shapes used with Novalux units are all carefully designed to meet certain requirements. All of them meet the technical ends of having ample surface to radiate the heat generated by the lamp, and to properly diffuse the light. Each of them is designed to fill a special architectural want.

The Eight-Panel Globe, the Number 39, 109, 37 and 107 globes are derived from forms originally used with arc lights. They are now made in rippled glass and with glass canopies if desired; and they may be used to replace or supplement arc lights with similar globes without destroying architectural uniformity.

The other globes and the lanterns are distinctly for use with Mazda lamps. The Number 92, 97, and 118 globes are derived from the eight-panel units. The Number 103, 123, 104 and 124 globes are urn-shaped in outline and are particularly adapted for all-glass construction.

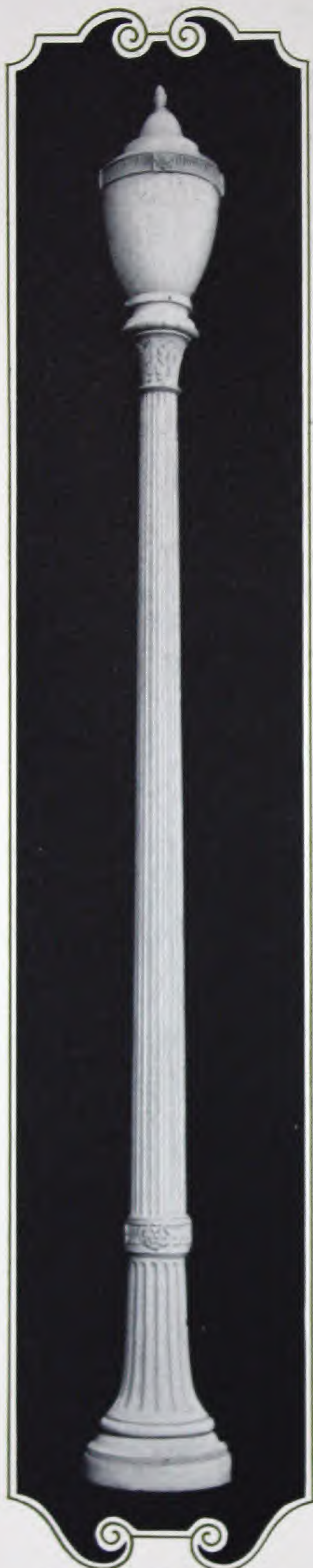
The great variety of globes and casings gives combinations which make Novalux units available for every requirement.



*Form 9—No. 118 Globe*



## Form 12



Form 12—No. 104 Globe

THE Form 12 Ornamental Novalux Unit is one of the best of the recent contributions to decorative street lighting. The first ornamental units were ponderous and inefficient, with massive and over-decorated standards; the more recent designs are better. Poles are now slender and unobtrusive; the diffusion of the light is effective and its distribution is efficient; globes are gracefully shaped and beautifully finished. The Form 12 unit is a splendid representative of the new type of street lighting units.

The same internal parts are used in the casing as in the Form 9. The socket is mounted upon an insulating plate which rests upon lugs in the casing, and in the auto-transformer types the coil is fastened to the under side of the insulator.

The casing, designed for a pole having a five-inch top diameter, is made in two parts: the casing proper, and an adapter or globe seat. The adapter, made in three sizes to fit different globes, holds them firmly and gently; four screws placed 90 degrees apart bear upon spring steel fingers which in turn clamp the lower lip of the globe, holding it securely in place and eliminating any danger of breakage in tightening the screws.

The casing is built on graceful lines and is artistically decorated.

The contour of the Number 123 rippled alabaster globe is the result of studious effort on the part of General Electric designing engineers to produce a unit which would combine beauty of appearance with efficiency in operation. The graceful lines produce a very pleasing effect and the rippled glass gives the lowest absorption compatible with perfect diffusion. The upper part of the globe is a separate glass canopy held to the globe by an ornamental perforated brass band. The bottom opening has been reduced to a minimum to prevent loss of light and to improve the appearance of the globe.

The Number 103 Polycase globe is identical with the Number 123 except that a smooth diffusing glass is used in place of the rippled alabaster glass.

Neither the Number 103 nor the 123 globes can be used with adapters that are designed to receive auto-transformers.



Where large lamps are to be used large globes are required to obtain the proper diffusion and to radiate the heat generated in the light.

The Number 124 alabaster rippled globe is the same as the Number 123 except that it is larger and the adapter will contain an auto-transformer; hence, it may be used with high current series lamps. The Number 104 Polycase globe, except that it is not made of rippled glass, is identical with the Number 124.

The Number 118 rippled alabaster globe, though slightly less decorative than the others for the Form 12 unit, is excellent for white way lighting. The shape is similar to that of the Eight-Panel globes. It may be had with a glass or a metal canopy and with or without an auto-transformer. The Number 97 Genco globe corresponds in every way with the Number 118, differing only in being made of plain diffusing glass.



*Form 12—No. 118 Globe*

Any of the rippled glass globes for the Form 12 unit can be supplied with Holophane dome refractors.

The Number 118, 123 and 124 globes are the same size and shape respectively as the Number 97, 103 and 104, except that the former are made of rippled alabaster glass.

In the Form 12 unit a single casing, designed for a standard with a five-inch top diameter, is made to fit a great variety of large and small globes by means of three different adapters or globe seats. This makes the Form 12 unit available for both primary and secondary business streets by merely using a different adapter and globe; for instance, the Number 124 globe could be used on the principal business streets and the Number 123 globe, which is exactly the same in design, would be appropriate on the less important streets.



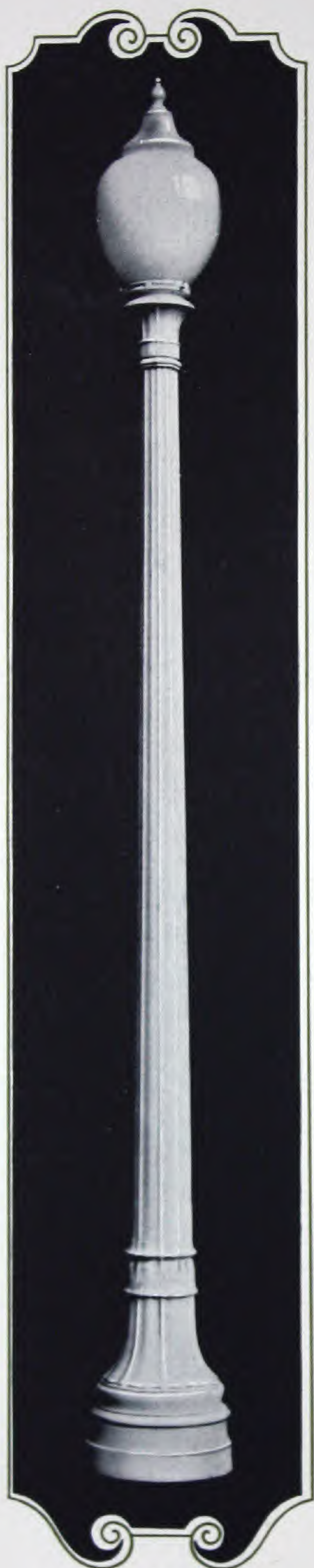
## Form 13

**T**HE Form 13 unit carries the same graceful lines as the Form 12, but is slightly smaller, and, like the Form 8, is particularly adapted to white way lighting in towns, villages and the secondary business streets of large cities. It should be used with 4000- and 6000-lumen series or 300- and 400-watt multiple Mazda lamps.

The casing is the same internally as the Form 8; a very simple porcelain socket rests on two lugs on the inside and forms a support for the lamp receptacle. An auto-transformer cannot be used. Architecturally the casing is in accord with an octagonal standard or other of simple design having a four-inch diameter at the top. A globe seat is embodied in the casing, the globe being held by three spring steel fingers actuated by set screws.

The Number 92 Genco globe has very small top and bottom openings; hence, the light lost is small. Either a metal or a glass canopy is furnished, no internal reflector being necessary.

From time to time street lighting units must be opened for cleaning and replacing lamps. Novalux units have been designed to make this as simple an operation as possible. In most of them access to the interior is made possible by the removal of the canopy, which means that the main globe does not have to be lifted from its seat, greatly reducing the risk of breakage through careless handling. The canopy on most globes is removed by unscrewing the ornamental knob at the top. On some globes the perforated brass band which holds the canopy in place is removed, and in the eight-panel globes the canopy is hinged in place. All the globes are easy to open even when covered with snow and ice.



*Form 13—No. 92 Globe*



## Form 16

**T**HE Form 16 unit is a replica of the Form 13 on a larger scale. The same severe and simple Flemish character appears in the casing design of both. The Form 16, however, is for use with 6000- to 10,000-lumen series or 400- to 1000-watt multiple Mazda C lamps. It should be used for the white ways in larger cities when the Form 13 is used for the secondary business streets. A combination of these two units makes it possible to cover a wide range in lamp intensities without sacrificing uniformity of appearance.

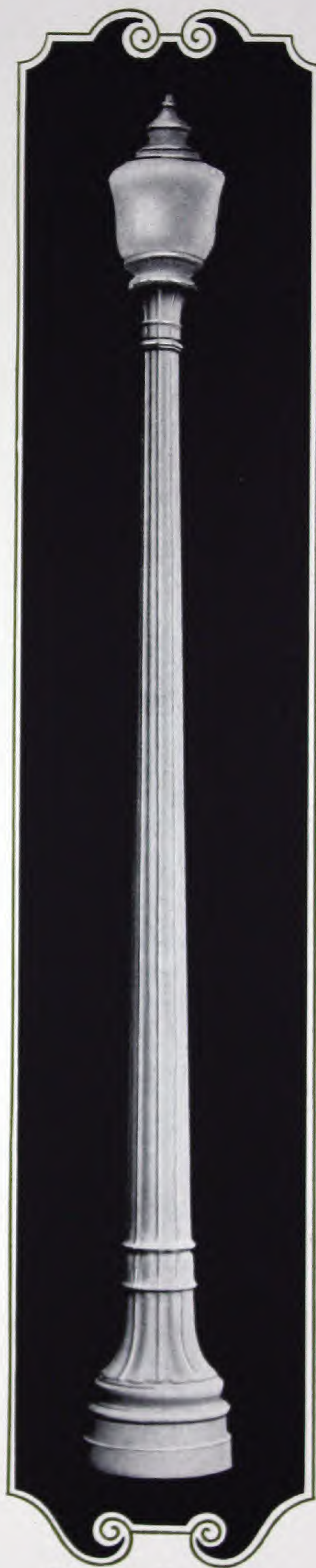
In the construction of the Form 16, the same internal parts are used as in the Form 9. A porcelain insulating plate rests on two lugs inside the casing and acts as a base for the socket. When an auto-transformer is used, it is fastened to the under side of this plate.

The Form 16 Novalux unit may be used with a variety of globes and canopies. When used with the Number 37 Genco globe it may have either a glass or a metal canopy. The same shape when made of rippled alabaster glass is known as the Number 107 globe which likewise may be had with either a metal canopy or as complete rippled glass unit with the highest efficiency and unequaled appearance. The rippled glass by virtue of the irregularities in its surface is an almost perfect diffusing medium, only a light flashing of opal being necessary for purposes of preventing glare. Rippled glass also adds sparkle and brilliance to the unit by day as well as by night. Moreover, when the rippled surface becomes dusty, the first rain running down the furrows washes them out and does not leave the glass looking soiled and streaked.

The Number 97 Genco globe corresponds in form to the Number 92 Genco globe used on the Form 13 unit; it is, however, larger. It may be had with either a metal or a glass canopy.

The Number 118 rippled alabaster globe is the same as used on the Form 9 unit and is the same size and shape as the Number 97. It may be had with either a glass or a metal canopy.

Units with rippled glass globes may be equipped with a Holophane dome refractor which gives somewhat better distribution for parkway and boulevard lighting.



*Form 16—No. 37 Globe*





*Form 16—No. 97 Globe*

or placed in a manhole. It serves the double purpose of increasing the current and acting as an insulator. This makes it very useful for supplying fifteen or twenty amperes to high efficiency lamps from the standard series circuits. As an insulator this transformer gives the maximum safety, it being unnecessary to have any high voltage circuits above the ground level. The Type IL transformer also protects the lamps from surges in the line, a seventy-five per cent increase in primary current giving only a forty-five per cent increase in secondary current.

Auxiliary transformers are coming into extensive use with constant current ornamental street lighting systems. In general these are divided into two types: auto-transformers and Type IL transformers. The former are a part of the unit and are supplied with it when required; the latter are separate transformers.

Auto-transformers are mounted in the casings of certain ornamental units. They serve to increase the current of the series circuit from 6.6 amperes to fifteen or twenty amperes for use with the high current Mazda lamps. These transformers do not insulate the lamp from the high current which may occur in the series circuit; therefore they do not give any additional protection to the installation or safety to persons coming in contact with it.

The Type IL transformer may be used with any Novalux unit. It is ordinarily located in the base of the standard, buried in the ground,



## Form 17

**T**HE Form 17 unit is radically different in design from the Novalux street lights already described; consequently, its application covers a somewhat different field. It is offered as a means of securing an attractive and efficient installation with particularly low upkeep.

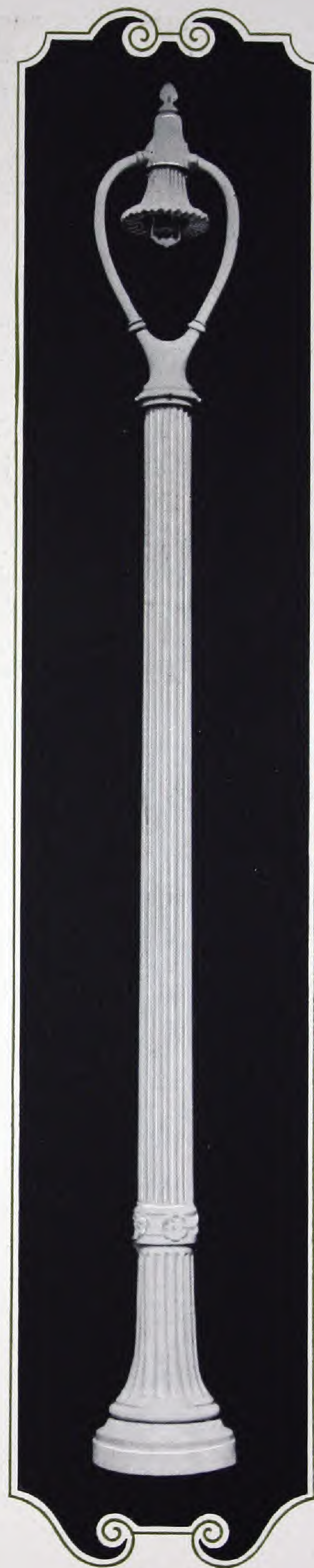
A single piece of porcelain acts as a combined insulator, reflector and socket-holder. Instead of a diffusing globe to eliminate glare a bowl-frosted or bowl-enameled Mazda lamp of moderate intensity is used against the white background of the reflector.

The fixture complete consists of a heart-shaped pipe support from the top of which is suspended the all-porcelain unit glazed white underneath on the radial reflecting surface and green above where it is exposed to the weather. A removable iron top canopy gives easy access to internal binding posts in the porcelain insulator from which leads are run through the supports. At the bottom of the unit, the supports are joined to a heavy casting which fits a standard with a six-inch top and in which there is a covered handhole in order that the leads from the fixture may be attached to the line wires.

The Form 17 unit, due to its heavy porcelain insulator, is particularly suited for straight series lamps but the type of diffusion employed limits the size of these lamps to 2500 lumens and below. The unit can not be equipped with an auto-transformer for high current lamps. The porcelain reflector distributes the light in such a way that most of it falls on the street surface, with little at higher angles.

The characteristics of the globeless unit which recommend it very highly for the lighting of boulevards, parkways, and residential districts are briefly as follows: Very low maintenance cost due to the accessibility of all parts and the absence of expensive globes which are easily broken in handling or by small boys with a predilection for showing their prowess as marksmen; very high efficiency because there is no glassware to absorb from 25 to 40 per cent of the light from the lamp; a distribution which insures no upward light in the windows of residences; insulation that will stand a 25,000-volt test.

If desired, the Form 17 Novalux may be had with a Holophane band refractor surrounding the lamp. This



Form 17



redirects the light from the higher angles to the lower, insuring more uniform illumination of the street surface and less light shining on the upstairs windows facing the street. Refractors, of course, decrease the efficiency of the units, but in some installations the improved distribution warrants their use.

Economy, efficiency and durability combined with attractive appearance make the Form 17 unit desirable for a highly practical street lighting installation wherever intense illumination is not necessary.

The use of refractors is recommended only where very definite results are desired by special distribution of light. When refractors are used it is very important that the filament of the lamp is at the exact light center of the globe and refractor. If it is not, the distribution of light may vary widely from that which the refractor was designed to accomplish, the resultant illumination being very much different from that desired.

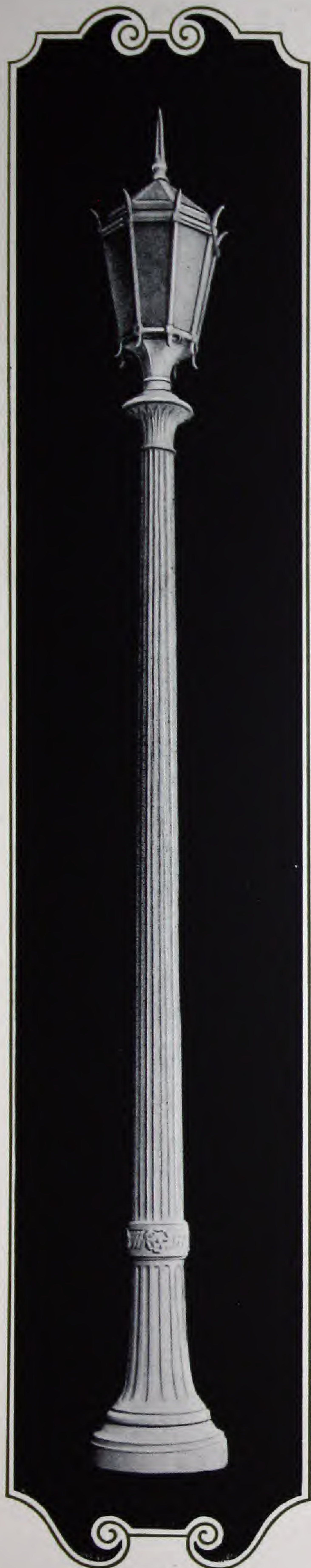
Novalux units have been particularly designed for use with Mazda lamps. This means that the receptacles are arranged so that the filaments of Mazda lamps will in every case occupy the light center of the globe and be in proper position to give the correct distribution if a refractor is employed.



*Form 17 with Refractor*



## Form 18



*Large Form 18*

**T**HE Novalux lanterns are made of the best grade of cast iron or aluminum from machine patterns and all parts fit in their respective places without any more fabricating than the drilling of holes. The corners are cast sharp and the surfaces smooth, bringing out a beauty of detail which is almost impossible to obtain with bent or punched pieces of lighter material. The different parts are held together with brass screws, nuts, and lock washers eliminating any chance of the corrosion of tapped holes, a feature which will be appreciated by maintenance men.

No loose panel doors have been provided in these units, the lamp being reached by throwing back the top canopy. To make the unit dustproof the canopy is made to rest against a padded surface. At the factory all castings are given one coat of black japan which is ample protection till the units are installed when they may be painted as desired. The lantern may be crated disassembled thus reducing the cost of boxing and the cubical contents of the container, which is of importance in making foreign shipments.

The two sizes in which the Form 18 Novalux lantern are available meet every requirement of ornamental street lighting besides being very useful for the ornamental lighting of certain types of buildings. The larger size may be equipped with auto-transformers for high current series lamps in sizes up to 15,000 lumens. Both the large and the small lantern can be used with the straight series and multiple lamps or with a Type IL transformer. The lamps in these units burn with the tip up.

Eight flat glass panels are required for the sides and eight more for the top of this unit. Spring clamps hold these panels against soft felt cushions which reduce the danger of breakage and make the unit dustproof and weatherproof.

Panels for the Form 18 unit may be had in diffusing glass or in rippled alabaster glass.



## Form 19



*Large Form 19*

THE Lantern design is the oldest form of lighting unit. To this day it finds an important place in the lighting of most European cities. Because it does not harmonize with our modern architecture to the same extent as it does with the century-old buildings of other countries, it may not be so universally adaptable in this country; however, it will find certain use here for white way and boulevard lighting. The Forms 18 and 19 Novalux are lantern type units differing from other American models in that they retain the ornamental projections which are a fundamental part of lantern design. The attempt to modernize the lantern by omitting this ornamentation robs it of the very feature which lends it beauty and dignity. The ribs are extended gracefully and the top canopy terminates in a slender pinnacle. These Novalux

units are in architectural accord with the old standards of lantern design.

The Form 19 Novalux unit is a lantern type built for suspension from an ornamental bracket rather than for mounting on a standard. In design it corresponds to the Form 18 and is particularly intended for parkways, boulevards and residential districts in cities where the ornamental lantern is used for the white ways.

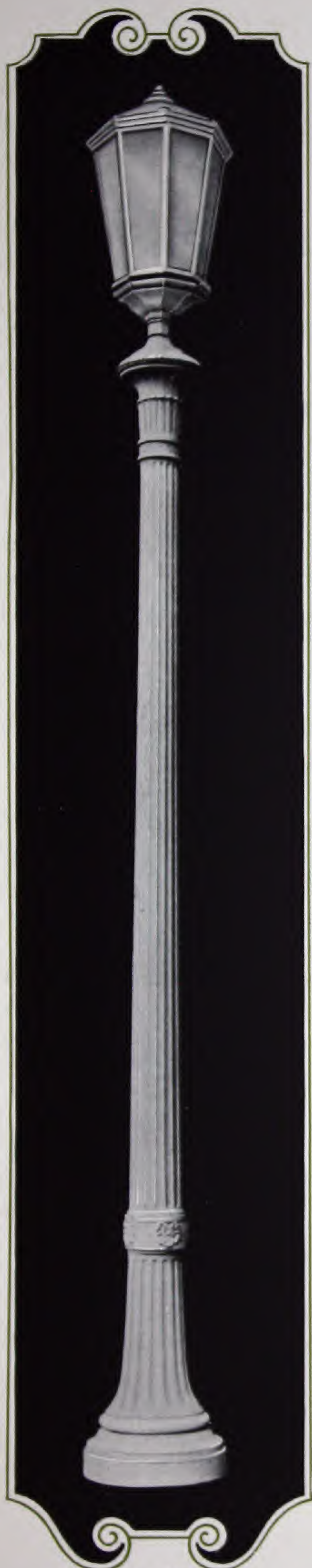
The castings are the same as for the Form 18 lantern with the exception of slight changes. The spiked pinnacle is replaced by a flexible suspension hook and cable box. The bottom of the lantern is a grid casting with false panels to provide light directly under the unit.

In these pendent lanterns two sizes are made corresponding to the large and small Form 18 lanterns for mounting on ornamental standards. Two types of glass panels are also provided, rippled alabaster and diffusing glass. With the former a Holophane dome reflector may be used if desired.

The small size Form 19 unit is designed for 300- to 500-watt multiple lamps, and the large size for 750- and 1000-watt multiple lamps. Series lamps should not be used with pendent lanterns.

An important advantage of the lantern type of unit is the use of comparatively small, flat panels of glass, not easily broken in shipment or handling and readily replaceable at small cost. The item of globe breakage, including as it does the cost of boxing and shipping, is of such importance that it will outweigh other considerations in many cases.





*Large Form 23*

## Form 23

**T**HE Form 23 Ornamental Novalux is a modest and inconspicuous lantern type unit suitable for either white way or less intensive decorative lighting. In certain communities where colonial architecture is the prevailing type, the severe straight lines of this lantern form the most artistic treatment for the lighting units.

The Form 23 lantern is made in two sizes: A large one which can be provided with an auto-transformer and used with multiple, straight series, or high current series Mazda lamps for intensive lighting; and a small one for residential districts which cannot be had with an auto-transformer for high current lamps.

The top and bottom octagonal parts of the lantern frame are each made of one piece of cast bronze. The ribs for the sides and top are built of galvanized sheet steel with a cold rolled copper veneer. All bolts for holding the glass panels are fastened to the inside of the steel ribs before the copper is put on, making them invisible from the outside. The eight glass panels are securely held in place by the ribs, giving a finished lantern which is made dustproof and weatherproof by the use of felt gaskets. The cast bottom and top sections connected by steel ribs give the lantern such strength that it will easily stand the weight of a man without collapsing. Paint is not needed for protection as the outside of the paneling ribs, the top and bottom castings, and the ornamental canopy are all made of copper or bronze; nor is it needed for decoration, as copper and bronze naturally weathered make a very beautiful finish in themselves. The freedom from the necessity of painting is, besides, a considerable additional saving in maintenance. Inside the unit a large copper reflector treated with aluminum bronze acts as a support for a dome refractor which may be used if it is desired to throw a maximum of light on the street surface.

In the large unit access to the interior for replacing the lamp is gained through a side panel which is hinged at the top and secured by a brass thumbscrew at the bottom. The canopy or hood is made of eight panels of clear rippled glass. The eight side panels are cut from flat sheets of rippled alabaster glass.





*Small Form 23*

doorway. The regular lantern type of unit, when mounted on suitable newels has been used with very great success in the decorative illumination of entrances to parks, estates, and cemeteries. When used in such locations it is often not advisable to install lamps of the same high power as would be used in the lantern were it a part of an intensive street lighting system.

In the small unit the canopy is made of sheet metal and is hinged at one side so that it may be thrown back for changing the globe or cleaning the interior. No hinged panel is necessary. The eight side panels are of rippled alabaster glass as in the large unit.

In both the large and the small unit the lamps burn tip down.

In respect to globe renewals, which in many installations is a more serious item than that of Mazda lamps, it is self-evident that a unit with a number of flat glass panels which are easy to obtain and inexpensive will have a lower maintenance cost than one with a large blown or moulded globe.

The lantern type of unit finds much favor as a decorative lighting fixture on buildings, bridges, gateways, and in other similar locations. The pendent type of lantern is very effective when suspended on brackets at either side of a





*Form 24*

## *Form 24*

**T**HE Form 24 Ornamental Novalux is a suspension type lantern unit similar in size and design to the large Form 23 lantern for pole mounting. The original street lighting lanterns used years ago were generally of the suspension type, having been at first merely hand lanterns strung up over the street or hung by the doorways of houses. Modern lanterns modeled after the old patterns are also designed as suspension units and as such are particularly intended for hanging from ornamental brackets.

The main castings, ribs and glass panels of the Form 24 pendent unit are interchangeable with those of the large Form 23 unit. Instead of a canopy at the top, however, a bayonet joint is provided by means of which the unit is suspended. At the bottom eight glass panels allow the light to fall directly downward on the street below the lantern. One panel is hinged for opening when it is necessary to change the lamp. After removing the lamp, the entire lantern may be detached at the bayonet joint and removed, leaving the receptacle and wiring intact. Clear rippled glass is used for the top panels, and alabaster rippled glass for the side and bottom panels. The unit has an internal reflector and may be had with a Holophane dome refractor if so desired.

The Form 24 Novalux lantern is intended for use with 300- to 500-watt Mazda multiple lamps. It cannot be used on series circuits except in connection with a Type IL transformer.

The lamps burn with the tip down.



## Form 25



*Form 25 on Bishop's Crook*

**T**HE Form 25 basket type Novalux unit meets better than any other type the requirements of residential districts where the surroundings justify an ornamental treatment, where wide streets require curb mounting of the units rather than center span suspension, and where long spacings and high mountings are necessary to economize in the number of units used. The appearance of the basket type unit is very pleasing. From a distance it seems to have a sectional paneled globe, but the construction actually involves only a one-piece rippled glass globe supported by a basket formed of five copper bands. The rippled outer surface of the clear crystal globe not only induces a certain amount of diffusion but also gives life and sparkle to the light. The sparkle is also noticeable in the daytime. The rippled glass used in

these units has no opal flashing. The opal is unnecessary because of the high mountings and relatively low intensities at which these units are designed to operate, sufficient diffusion being secured by the rippling alone.

The bracket type of mounting increases the utilization of light on the street surface and reduces the likelihood of interference from overhanging tree foliage. Moreover, lights placed out over the street rather than on one side back of the curb, illuminate both curbstones and assist in outlining the boundaries of the pavement. Such an arrangement provides a much better distribution of light over the entire street surface, particularly where it is wide, than a similar system of units suspended over the center of the street.

The geographical extent of residential districts is so great that efficient light utilization becomes a serious problem. With staggered units far apart, each unit should be mounted high. Under these conditions, the dome refractor with which the unit is equipped provides a distribution of light which is admirably adapted to the requirements of residential streets.

The top of the Form 25 unit is a single iron casting which supports the socket and porcelain enameled reflector, and to which the basket is hinged. The reflector also serves as a holder for the Holophane dome refractor. The globe is held tightly against a felt gasket to prevent the accumulation of dust or insects inside the unit. The dimensions of the unit are such that the heat from the largest lamps is dissipated without any special provisions for ventilation. The basketwork is not of such a size as to materially reduce the light on the street.

The unit is built in a large and a small size. The small size, using a Number 116 alabaster rippled globe, is recommended for staggered mounting at intervals of from 200 to 300 feet at a height of 16 feet on residential streets. It is intended for use with 100- to 500-watt multiple lamps or 1000-lumen straight series lamps. The large size, using



a Number 108 Alabaster rippled globe, is recommended for staggered mounting at intervals of from 300 to 400 feet at a height of 20 feet on residential thoroughfares. It is intended for use with 300- to 500-watt multiple lamps, 2500- to 6000-lumen straight series lamps, or 4000- to 10,000-lumen series lamps with Type IL transformer.

The top castings of the basket type units are arranged to screw on the end of a pipe an inch and a quarter in diameter. This makes them available for use with the standard pipes and scrolls which are made in many forms for street system brackets.

Brackets suitable for use with the Form 25 Novalux unit are built by the General Electric Company in many forms. These are constructed from iron pipes bent in various shapes and supported by strap iron scroll work. The wires leading to the lighting unit proper pass through the iron pipe which forms the main bracket.

The insulation of this wire for use with series circuits should be at least equal to the maximum possible voltage in the circuit unless a Type IL transformer is used. All of the brackets are designed for fastening to poles with bolts or lag screws, but they may also be fastened to buildings or other supports.

The Form 25 unit can be installed on existing brackets wherever it is desired to change from an open lamp with an enameled reflector to something more attractive. The diffusing globe also makes it possible at the same time to increase the illumination by the use of larger lamps than would be possible without some means of concealing the glare of the naked lamp filament.



*Large Form 25*



# Summary of Units and Equipments

In order to condense the information relating to the various Novalux units, a summary is given here. The sketches of the units are drawn to scale in order to indicate size. In general the large units for intensive lighting are on the right, while the left hand column contains the units for less powerful Mazda lamps.

## FORM EIGHT

*Straight Series—1000 to 6,000 Lumens*  
*Straight Multiple—200 to 1000 Watts*  
*IL Transformer—4000 to 10,000 Lumens*

1. No. 109 rippled alabaster globe with metal or rippled alabaster canopy.
2. No. 123 rippled alabaster globe with rippled alabaster canopy.
3. No. 39 Genco globe with metal or Genco canopy.
4. No. 103 Polycase globe with Polycase canopy.
5. Dome refractor and No. 109 rippled alabaster globe with metal or rippled alabaster canopy.
6. Dome refractor and No. 123 rippled alabaster globe with rippled alabaster canopy.



## FORM NINE

*Straight Series—4000 to 6000 Lumens*  
*Straight Multiple—400 to 1000 Watts*  
*IL Transformer—4000 to 15,000 Lumens*  
*Auto-Transformer—4000 to 10,000 Lumens*

1. No. 107 rippled alabaster globe and metal or alabaster rippled canopy.
2. No. 37 Genco globe with metal or Genco canopy.
3. No. 90 eight-panel diffusing globe.
4. Dome refractor and No. 107 rippled alabaster globe with metal or rippled alabaster canopy.
5. Dome refractor with No. 90 eight-panel stippled globe.



## FORM TWELVE

*Straight Series—2500 or 6000 Lumens*  
*Straight Multiple—500 to 1000 Watts*

*IL Transformer—4000 to 15,000 Lumens*  
*Auto-Transformer—4000 to 10,000 Lumens*

1. No. 123 rippled alabaster globe and rippled alabaster canopy. This combination will not accommodate an auto-transformer.
2. No. 124 rippled alabaster globe and rippled alabaster canopy.
3. No. 118 rippled alabaster globe and metal or rippled alabaster canopy.
4. No. 97 Genco globe and Genco canopy.
5. No. 103 polycase globe and polycase canopy.
6. No. 104 polycase globe and polycase canopy.
7. Dome refractor and No. 123 rippled alabaster globe with rippled alabaster canopy. This combination will not accommodate an auto-transformer.
8. Dome refractor and No. 124 rippled alabaster globe with rippled alabaster canopy.
9. Dome refractor and No. 118 rippled alabaster globe with metal or rippled alabaster canopy.

## FORM THIRTEEN

*Straight Series—2500 to 6000 Lumens*  
*Straight Multiple—300 to 500 Watts*  
*IL Transformer—4000 to 10,000 Lumens*

1. No. 92 Genco globe with metal or Genco canopy.
2. No. 109 rippled alabaster globe with metal or rippled alabaster canopy.
3. No. 39 Genco globe with metal or Genco canopy.

## FORM SIXTEEN

*Straight Series—2500 to 6000 Lumens*  
*Straight Multiple—300 to 1000 Watts*  
*IL Transformer—4000 to 15,000 Lumens*  
*Auto-Transformer—4000 to 10,000 Lumens*

1. No. 107 rippled alabaster globe with metal or rippled alabaster canopy.
2. No. 118 rippled alabaster globe with metal or rippled alabaster canopy.
3. No. 37 Genco globe with metal or Genco canopy.
4. No. 97 Genco globe with metal or Genco canopy.
5. Dome refractor and No. 107 rippled alabaster globe with metal or rippled alabaster canopy.
6. Dome refractor and No. 118 rippled alabaster globe with metal or rippled alabaster canopy.





## FORM SEVENTEEN

*Straight Series—1000 to 2500 Lumens*

1. Radial porcelain reflector, without diffusing globe.
2. Dome refractor and radial porcelain reflector without diffusing globe.

Form 17

## FORM TWENTY-FOUR LANTERN

*Straight Multiple—300 to 500 Watts*

*IL Transformer—4000 to 10,000 Lumens*

1. Dome refractor with eight-panel rippled glass lantern.

Form 24

## FORM EIGHTEEN

### SMALL LANTERN

*Straight Series—2500 to 6000 Lumens*

*Straight Multiple—300 to 1000 Watts*

*IL Transformer—4000 to 10,000 Lumens*

1. Diffusing glass panels.
2. Dome refractor with rippled glass panels.

Form 18

### LARGE LANTERN

*Straight Series—4000 to 6000 Lumens*

*Straight Multiple—400 to 1000 Watts*

*IL Transformer—4000 to 15,000 Lumens*

*Auto-Transformer—4000 to 10,000 Lumens*

1. Diffusing glass panels.
2. Dome refractor with rippled glass panels.

Form 18

## FORM NINETEEN

### SMALL LANTERN

*Straight Multiple—300 to 500 Watts*

1. Diffusing glass panels.
2. Dome refractor and rippled glass panels.

Form 19

### LARGE LANTERN

*Straight Multiple—300 to 1000 Watts*

1. Diffusing glass panels.
2. Dome refractor and rippled panels.

Form 19

## FORM TWENTY-THREE

### SMALL LANTERN

*Straight Series—2500 to 6000 Lumens*

*Straight Multiple—300 to 500 Watts*

*IL Transformer—4000 to 10,000 Lumens*

1. Dome refractor with rippled glass panels.

Form 23

### LARGE LANTERN

*Straight Series—2500 to 6000 Lumens*

*Straight Multiple—400 to 1000 Watts*

*IL Transformer—4000 to 15,000 Lumens*

*Auto-Transformer—4000 to 10,000 Lumens*

1. Dome refractor with rippled glass panels.

Form 23

## FORM TWENTY-FIVE

### SMALL BASKET

*Straight Series—1000 Lumens*

*Straight Multiple—100 to 500 Watts*

1. Dome refractor and No. 116 rippled alabaster globe.

Form 25 116 Globe

### LARGE BASKET

*Straight Series—2500 to 6000 Lumens*

*Straight Multiple—300 to 500 Lumens*

*IL Transformer—4000 to 10,000 Lumens*

1. Dome refractor with No. 108 rippled alabaster globe.

Form 25 108 Globe



## Ornamental Standards



RNAMENTAL standards which are an essential part of decorative street lighting installations are not supplied by the General Electric Company. Several manufacturers, however, specialize in making very attractive poles in a number of different architectural styles.

These standards are, as a rule, made of one of three substances; cast iron, pressed steel or reinforced concrete. The units described in this booklet are all intended for use with iron or steel poles; however, a unit for concrete poles known as the Form 22 is also made. The casing of this unit is short, thick set, and simple in design to harmonize with the heavy, severe lines of concrete standards. It is made in several slightly different types to accommodate any of the globes described in connection with the units for steel or iron poles.

Novalux units are often used on special standards. Short poles and brackets are frequently necessary for bridges, gateways, narrow streets and building entrances. Some cities, however, having adopted a definite and comprehensive plan of street lighting, use Novalux units on ornamental standards of a design especially characteristic of the city or at least architecturally appropriate. This insures the very best artistic effect besides making the city distinctive in its street lighting.

The General Electric Company co-operates with several prominent pole manufacturers in designing ornamental standards to meet such special requirements.











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